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EXAMINER

CANTELMO, GREGG

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Paper No. 02242003

Application Number: 09/334,974
Filing Date: June 17, 1999
Appellant(s): FOSTER ET AL.

Karin H. Butchko
For Appellant

MAR 02 2004

EXAMINER'S ANSWER

This is in response to the appeal brief filed January 6, 2004.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

This appeal involves claims 1, 2, 4, 5, 7-24, 26-36 and 65-67.

Claims 3, 6, 25 and 37-63 have been canceled.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is correct.

(7) *Grouping of Claims*

Appellant's brief includes a statement that claims 1, 2, 4, 5, 7-24, 26-36 and 65-67 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) *Claims Appealed*

The copy of the appealed claims contained in the Appendix to the brief is correct

(9) Prior Art of Record

5,413,874	MOYSAN '874	5-1995
5,922,478	WELTY	7-1999
5,558,729	PUDEM	9-1996
0 486 711 A1	EP '711	11-1990

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(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 2, 4, 7-9 21-23, 26-28 and 65-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent No. 5,413,874 (Moysan '874) in view of European Patent Application No. 0 486 711 A1 (EP '711); all of record and for the reasons of record.

Moysan '874 is drawn to a process of depositing a multi layer coating on at least a portion of an article surface comprising: depositing by electroplating at least one metal or metal alloy containing layer 13 on at least a portion of said article surface, depositing by PVD on at least a portion of said electroplated layer at least one layer (22 or 24 in Fig. 1) comprising a material selected from the group consisting of refractory metals or

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refractory metal alloys as recited the genus of instant claim 1 (see col. 4, ll. 18-22 and col. 4, line 60 through col. 5, line 14 as applied to claim 1).

The electroplating comprises nickel (col. 2, ll. 13-15 as applied to claim 2).

The refractory metal layer can be zirconium, titanium or a zirconium-titanium alloy (col. 4, ll. 18-22 and col. 4, line 60 through col. 5, line 14 as applied to claim 4).

The refractory metal compound deposited on the nickel layer can also be a refractory metal alloy compound such as nitrides or oxides (col. 5, ll. 5-14 as applied to claim 7).

The compound can be zirconium nitride (col. 5, ll. 5-14 as applied to claim 8).

The compound can be zirconium nitride (col. 5, ll. 5-14 as applied to claim 9).

The electroplating comprises nickel (col. 2, ll. 13-15 as applied to claim 21).

The refractory metal, refractory metal alloy, refractory metal compound or refractory metal compound layer is deposited by PVD on at least a portion of said electroplated layer (see col. 4, ll. 18-22 and col. 4, line 60 through col. 5, line 14 as applied to claim 22).

The refractory metal layer can be zirconium, titanium or a zirconium-titanium alloy (col. 4, ll. 18-22 and col. 4, line 60 through col. 5, line 14 as applied to claim 23).

The refractory metal compound deposited on the nickel layer can also be a refractory metal alloy compound such as nitrides, carbides, carbonitrides, oxides etc. (col. 5, ll. 5-14 as applied to claim 26).

The refractory metal compound can be zirconium nitride (col. 5, ll. 5-14 as applied to claim 27).

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The refractory metal compound can be zirconium nitride (col. 5, ll. 5-14 as applied to claim 28).

The differences between the instant claims and Moysan '874 are that Moysan '874 fails to explicitly disclose of a step of subjecting the plated layer to pulses of air to dry and clean the article surface (instant claim 1), of the drying period being between 2 and 5 minutes (claim 65), of atomizing water droplets on the article surface during pulse drying (claim 66), of one pulse of air being generated per square centimeter of article surface (claim 67).

With respect to claim 1:

EP '711 discloses of a procedure for blowing off liquid from an object by using pulsating compressed air to dispel the liquid (abstract). This reference particularly teaches that this process is advantageously used in plating processes such as electroplating (page 5 of translation) to remove and recover electrolytes and further to provide a "spot-free" dryness, i.e., that no drops or traces of drops remain on the dried objects. Upon removing the unused electrolytes, the object will also be cleaned (as applied to claim 1).

The timeliness of dry cleaning would have obviously been immediately after deposition of the electroplated layer and prior to any further depositions to clean and dry the surface and recover and unplated electrolytes on the surface.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Moysan '874 by

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incorporating the pulsed air process of EP '711 since it would have provided a means to remove and recover excess electrolytes on the surface of the article and also to provide a "spot-free" dryness, i.e., that no drops or traces of drops remain on the dried objects.

With respect to claim 65:

The prior art apparatus of EP '711 is configured to have air jets wherein a control device 13 can adjust the time which the nozzles are open as well as the frequency for opening the nozzles (paragraph bridging pages 3 and 4 of the translation of EP '711).

One of ordinary skill in the art would have recognized that by optimizing the frequency of opening the nozzles, the time at which the nozzles are open for each pulse and the pressure of compressed air fed to the nozzles, the drying time can be optimized accordingly to a desired drying time period for the electroplated article. Furthermore, EP '711 recognizes the desire for short drying periods (last 4 lines of the abstract).

Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Boesche, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). Furthermore there is no clear teaching by the instant application that such a range is critical.

With respect to claim 66:

This claim limitation is presented in terms of a function, property or characteristic in relation to the drying process step. The prior art of EP '711 is the same drying apparatus but EP '711 fails to explicitly disclose this function. The prior art apparatus of EP '711 is configured to dry the surface of the electroplated article and reclaim unused electrolyte. While the teachings of EP '711 are silent as to atomization of water droplets on the article surface, the prior art apparatus in combination with the pulse frequency and pressure of compressed air applied through the nozzles (see paragraph bridging pages 3 and 4 of the translation of EP '711) are expected to cause at least a portion of the water or moisture on the article surface to be atomized (see MPEP § 2112).

With respect to claim 67:

EP '711 teaches of each tubes axial length being 150 mm (15 cm) and that each opening is 10 mm from each other (1 cm). In order for the pulses of air to reach across the axial length of the article and given the spacing arrangement of each air jet opening being 1 cm between jets, each jet and related air pulse would have been optimized to cover 1 square centimeter of the article surface.

Given the nozzle spacing of EP '711 being 1 cm, and that these jets on a given tube are stationary, the diameter of the air pulse from a given jet would have to be generated for at least 1 square centimeter. If the pulses were not optimized in this manner, then the air pulse from adjacent nozzles would not provide a continuous net jet pulse along the axial direction of the tube. This would have left moisture residue in the

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areas between adjacent nozzles. Thus given a 1 cm spacing between adjacent nozzles, one of ordinary skill in the art would have required that each air pulse from a respective jet generate an air jet stream for 1 square centimeter of the article surface to effectively dry the electroplated layer across the entire axial direction of the article.

The motivation for providing the air jets and pulses of air such that one pulse of air is generated for one square centimeter of said article surface is that it would have provided a net continuous air pulse along the axial extent of the article which would have optimized the drying of the electroplated layer on the article.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Moysan '874 by providing the air jets and pulses of air such that one pulse of air is generated for one square centimeter of said article surface since it would have provided a net continuous air pulse along the axial extent of the article which would have optimized the drying of the electroplated layer on the article.

2. Claims 1, 2, 4, 5, 7-9, 21-24, 26-36 and 65-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent No. 5,922,478 (Welty) in view of European Patent Application No. 0 486 711 A1 (EP '711) all of record and for the reasons of record.

Welty is drawn to a process of depositing a multi layer coating on at least a portion of an article surface comprising: depositing by electroplating at least one metal or metal alloy containing layer 13 on at least a portion of said article surface, depositing by PVD on at least a portion of said electroplated layer at least one layer (22, 29, 30,

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32, 34 in Fig. 1) comprising a material selected from the group consisting of refractory metals or refractory metal alloys as recited the genus of instant claim 1 (see col. 2, ll. 35-40 and col. 4, ll. 16-24 as applied to claim 1).

The electroplating comprises nickel (col. 2, ll. 35-40 as applied to claim 2).

The refractory metal layer can be zirconium, titanium or a zirconium-titanium alloy (col. 4, ll. 11-16 as applied to claim 4).

The refractory metal layer can be a zirconium-titanium alloy (col. 4, ll. 11-16 as applied to claim 5).

The refractory metal compound deposited on the nickel layer can also be a refractory metal alloy compound such as nitrides or oxides (col. 5, ll. 7-20 as applied to claim 7).

The compound can be zirconium nitride (col. 5, ll. 7-20 as applied to claim 8).

The compound can be zirconium nitride (col. 5, ll. 7-20 as applied to claim 9).

The electroplating comprises nickel (col. 2, ll. 35-40 as applied to claim 21).

The refractory metal, refractory metal alloy, refractory metal compound or refractory metal compound layer is deposited by PVD on at least a portion of said electroplated layer (see col. 2, ll. 35-40 and col. 4, ll. 16-24 as applied to claim 22).

The refractory metal layer can be zirconium, titanium or a zirconium-titanium alloy (col. 4, ll. 11-16 as applied to claim 23).

The refractory metal layer can be a zirconium-titanium alloy (col. 4, ll. 11-16 as applied to claim 24).

The refractory metal compound deposited on the nickel layer can also be a refractory metal alloy compound such as nitrides, carbides, carbonitrides, oxides etc. (col. 5, ll. 7-20 as applied to claim 26).

The refractory metal compound can be zirconium nitride (col. 5, ll. 7-20 as applied to claim 27).

The refractory metal compound can be zirconium nitride (col. 5, ll. 7-20 as applied to claim 28).

The electroplating process comprises electroplating a nickel layer 16 on the article to provide at least one electroplated nickel layer and electroplating a chrome layer 21 directly on the nickel layer 13 (Fig. 1, col. 2, ll. 35-40 and col. 3, ll. 50-54 as applied to claim 29).

The refractory metal, refractory metal alloy, refractory metal compound or refractory metal compound layer is deposited by PVD on at least a portion of said electroplated layer (see col. 2, ll. 35-40 and col. 4, ll. 16-24 as applied to claim 30).

The refractory metal layer can be zirconium, titanium or a zirconium-titanium alloy (col. 4, ll. 11-16 as applied to claim 31).

The refractory metal layer can be a zirconium-titanium alloy (col. 4, ll. 11-16 as applied to claim 32).

A sandwich coating 26 of alternating layers of zirconium or zirconium-titanium alloy and zirconium nitride or zirconium-titanium nitride alloy is deposited over the zirconium or zirconium-titanium alloy (col. 4, ll. 54-59 as applied to claim 33).

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A zirconium nitride layer 32 is deposited by PVD over the sandwich layer (Fig. 1 and col. 5, line 57 through col. 6, line 22 as applied to claim 34).

A zirconium-titanium oxide layer 34 is deposited on the zirconium nitride layer 32 by PVD (col. 6, line 37 through col. 7, line 21 as applied to claim 35).

Layer 34 can also be the reaction product of zirconium deposited by PVD (col. 6, ll. 37-59 as applied to claim 36).

The differences between the instant claims and Welty are that Welty fails to explicitly disclose of a step of subjecting the plated layer to pulses of air to dry and clean the article surface (instant claim 1), of a drying period being between 2 and 5 minutes (claim 65), of atomizing water droplets on the article surface during pulse drying (claim 66), of one pulse of air being generated per square centimeter of article surface (claim 67).

With respect to claim 1:

EP '711 discloses of a procedure for blowing off liquid from an object by using pulsating compressed air to dispel the liquid (abstract). This reference particularly teaches that this process is advantageously used in plating processes such as electroplating (page 5 of translation) to remove and recover electrolytes and further to provide a "spot-free" dryness, i.e., that no drops or traces of drops remain on the dried objects. Upon removing the unused electrolytes, the object will also be cleaned (as applied to claim 1).

The timeliness of dry cleaning would have obviously been immediately after deposition of the electroplated layer and prior to any further depositions to clean and dry the surface and recover and unplate electrolytes on the surface.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Welty by incorporating the pulsed air process of EP '711 since it would have provided a means to remove and recover excess electrolytes on the surface of the article and also to provide a "spot-free" dryness, i.e., that no drops or traces of drops remain on the dried objects.

With respect to claim 65:

The prior art apparatus of EP '711 is configured to have air jets wherein a control device 13 can adjust the time which the nozzles are open as well as the frequency for opening the nozzles (paragraph bridging pages 3 and 4 of the translation of EP '711). One of ordinary skill in the art would have recognized that by optimizing the frequency of opening the nozzles, the time at which the nozzles are open for each pulse and the pressure of compressed air fed to the nozzles, the drying time can be optimized accordingly to a desired drying time period for the electroplated article. Furthermore, EP '711 recognizes the desire for short drying periods (last 4 lines of the abstract).

Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re

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Boesche, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). Furthermore there is no clear teaching by the instant application that such a range is critical.

With respect to claim 66:

This claim limitation is presented in terms of a function, property or characteristic in relation to the drying process step. The prior art of EP '711 is the same drying apparatus but EP '711 fails to explicitly disclose this function. The prior art apparatus of EP '711 is configured to dry the surface of the electroplated article and reclaim unused electrolyte. While the teachings of EP '711 are silent as to atomization of water droplets on the article surface, the prior art apparatus in combination with the pulse frequency and pressure of compressed air applied through the nozzles (see paragraph bridging pages 3 and 4 of the translation of EP '711) are expected to cause at least a portion of the water or moisture on the article surface to be atomized (see MPEP § 2112).

With respect to claim 67:

EP '711 teaches of each tubes axial length being 150 mm (15 cm) and that each opening is 10 mm from each other (1 cm). In order for the pulses of air to reach across the axial length of the article and given the spacing arrangement of each air jet opening being 1 cm between jets, each jet and related air pulse would have been optimized to cover 1 square centimeter of the article surface.

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Given the nozzle spacing of EP '711 being 1 cm, and that these jets on a given tube are stationary, the diameter of the air pulse from a given jet would have to be generated for at least 1 square centimeter. If the pulses were not optimized in this manner, then the air pulse from adjacent nozzles would not provide a continuous net jet pulse along the axial direction of the tube. This would have left moisture residue in the areas between adjacent nozzles. Thus given a 1 cm spacing between adjacent nozzles, one of ordinary skill in the art would have required that each air pulse from a respective jet generate an air jet stream for 1 square centimeter of the article surface to effectively dry the electroplated layer across the entire axial direction of the article.

The motivation for providing the air jets and pulses of air such that one pulse of air is generated for one square centimeter of said article surface is that it would have provided a net continuous air pulse along the axial extent of the article which would have optimized the drying of the electroplated layer on the article.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Welty by providing the air jets and pulses of air such that one pulse of air is generated for one square centimeter of said article surface since it would have provided a net continuous air pulse along the axial extent of the article which would have optimized the drying of the electroplated layer on the article.

3. Claims 10-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Welty in view of EP '711 as applied to claims 1-2, 4-5, 7-9, 21-24, 26-36 and 65-67

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above, and further in view of U.S. patent No. 5,558,759 (Pudem) all of record and for the reasons of record.

The teachings of Welty and EP '711 have already been discussed above and are incorporated herein.

The refractory metal layer deposited on the chrome layer 21 can be zirconium, titanium or a zirconium-titanium alloy (Welty col. 4, ll. 11-16 as applied to claim 11).

The refractory metal layer deposited on the chrome layer 21 can be zirconium, titanium or a zirconium-titanium alloy (Welty col. 4, ll. 11-16 as applied to claim 12).

The refractory metal layer can be a zirconium-titanium alloy (Welty col. 4, ll. 11-16 as applied to claim 13).

A sandwich coating 26 of alternating layers of zirconium or zirconium-titanium alloy and zirconium nitride or zirconium-titanium nitride alloy is deposited over the zirconium or zirconium-titanium alloy (Welty col. 4, ll. 54-59 as applied to claim 14).

A zirconium nitride layer 32 is deposited by PVD over the sandwich layer (Welty Fig. 1 and col. 5, line 57 through col. 6, line 22 as applied to claim 15).

A zirconium-titanium oxide layer 34 is deposited on the zirconium nitride layer 32 by PVD (Welty col. 6, line 37 through col. 7, line 21 as applied to claim 16).

Layer 34 can also be the reaction product of zirconium deposited by PVD (Welty col. 6, ll. 37-59 as applied to claim 17).

A zirconium nitride layer 32 is deposited over the zirconium or zirconium-titanium alloy layer 30 (Welty Fig. 1 and col. 5, line 57 through col. 6, line 22 as applied to claim 18).

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A zirconium oxide or zirconium-titanium oxide layer 34 is deposited over the zirconium layer 32 (Welty col. 6, line 37 through col. 7, line 21 as applied to claim 19).

Layer 34 can also be the reaction product of zirconium deposited by PVD (Welty col. 6, ll. 37-59 as applied to claim 20).

The differences not yet discussed are of: plating a copper film on a portion of an article's surface and subsequently plating a nickel layer on said copper layer and a chrome layer on said nickel layer (instant claim 10).

Pudem teaches of metal finishing processes wherein a first copper plating step is performed and thereafter, to form a brass finish, nickel and then chrome are plated (col. 10, lines 1-19). The advantages of a first copper plating is that it provides a uniform surface upon which additional layers can be plated (col. 2, ll. 1-5). Thus in depositing a brass finish, Pudem first teaches depositing copper (to provide a uniform surface upon which additional layers can be plated) and thereafter forming a nickel layer and chrome layer sequentially.

The motivation for using copper is to provide a uniform surface upon which additional layers are plated. The motivation for further depositing nickel and chrome is to impart a brass finish to the substrate.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Welty by plating the multilayer structure first with a copper plating layer as suggested in the teachings of Pudem since copper plating provides an adherent coating surface on a substrate to enhance the adherence of subsequently plated materials with the substrate. The

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combined structure would have improved the decorative and protective characteristics of the article of Welty.

(11) Response to Argument

ISSUE A. The rejection of claims 1, 2, 4, 7-9, 21-23, 26,28 and 65-67 as being obvious over Moysan (U.S. Patent No. 5,413,874) in view of European Patent Application (EP 0486711) is improper.

A-I: Appellant argues that EP '711 is non-analogous art to Appellant's invention and to Moysan '874 and is not reasonably pertinent to the particular problem that the Appellant has solved.

The Examiner respectfully disagrees.

First with respect to the arguments to non-analogous art:

Moysan '874 s drawn to a multilayer deposition process wherein at least one step of the process includes electroplating, for example of electroplating a nickel alloy (col. 3, ll. 28-39).

EP '711 is drawn to a process of pulse drying electroplated surfaces (abstract and page 2 of the translation of EP '711, in particular the second paragraph and final paragraph of the translated page).

Thus both a process step of Moysan '874 and the process of EP '711 are held to be analogous since they are both drawn to electroplating.

Therefore this argument is not persuasive and the rejection stands.

Second with respect to the arguments that EP '711 is not reasonably pertinent to the particular problem that the Appellant has solved:

Appellant states that EP '711 is directed towards a process for removing liquid from a surface for collection, while Moysan '874 and the Appellant's field concern coatings applied on an article. Appellant further states that EP '711 does not provide any suggestion to apply additional layers over the electroplated article.

The Examiner is not persuaded by the reasoning and arguments set forth by Appellant.

First each of EP '711, Moysan and the Appellant's are drawn to at least one step which employs an electroplating process. And as set forth above is an establishment of analogous art teachings.

While EP '711 does not teach of the multilayer coating, the Examiner does not apply this prior art reference in such a manner. Rather the rejection is Moysan '874 in view of EP '711 wherein Moysan '874 employs a multi-step coating process wherein at least one layer is an electroplated layer and further wherein additional layers are deposited atop the electroplated layer.

In using an electroplating step, one of ordinary skill in the art would have found it obvious to employ the teachings of EP '711 for the following reasons: process dispels liquid off of the plated surface (abstract), thereby drying the plated object (abstract). The process additionally reclaims any unused liquid from the surface of the object so that the unused liquid can be recycled (abstract). The surface treatment reclaims "electrolyte" (translated page 2 of EP '711, second paragraph, is used in a "general

electroplating" process, translated page 2 of EP '711, final paragraph), dries the object "completely" (translated page 4, second to last paragraph) and achieves a "spot-free dryness" of the object (translated page 5, paragraph beginning with "Figure 3 ...").

Appellant's argument is flawed because it fails to appreciate the manner in which the prior art of record is applied to the instant claims and further because it fails to appreciate the full and complete disclosure of the teachings of EP '711 when presenting arguments.

Therefore this argument is not persuasive and the rejection stands.

A-II: Appellant argues that there is no suggestion to modify Moysan '874 with EP '711.

The Examiner respectfully disagrees.

As set forth in response A-I above, both the teachings of Moysan '874 and EP '711 are held to be analogous art, primarily with respect to the electroplating art.

In addition, a full analysis of the disclosure of EP '711 provides explicit and clear reasons for motivation for using the pulse drying process of EP '711 in an electroplating process. The process dispels liquid off of the plated surface (abstract), thereby drying the plated object (abstract). The process additionally reclaims any unused liquid from the surface of the object so that the unused liquid can be recycled (abstract). The surface treatment reclaims "electrolyte" (translated page 2 of EP '711, second paragraph, is used in a "general electroplating" process, translated page 2 of EP '711, final paragraph), dries the object "completely" (translated page 4, second to last

paragraph) and achieves a "spot-free dryness" of the object (translated page 5, paragraph beginning with "Figure 3 ...").

Thus contrary to Appellant's position, there is numerous motivation provided throughout the explicit disclosure of EP '711 for using the pulse drying technique of EP '711 in an electroplating process and one of ordinary skill in the art would have had more than ample motivation to modify the teachings of Moysan '874 in light of the teachings of EP '711 for the reasons set forth in the rejection above and restated in the previous paragraph.

Therefore this argument is not persuasive and the rejection stands.

A-III: Appellant argues hindsight reconstruction.

The Examiner respectfully disagrees.

In response to Appellant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the Appellant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). As set forth in the prior art rejection and again presented in items A-I and A-II above, incorporated herein, the motivation is clearly found in the combined teachings of the prior art of record and thus is not hindsight reconstruction. In this particular case,

the knowledge to combine is obvious in view of the prior art of record teachings alone and therefore is not understood how Appellant can argue hindsight reconstruction when such is not the case with the current pending prior art rejections of record.

Therefore this argument is not persuasive and the rejection stands.

A-IV: Appellant argues that there is no suggestion in Moysan '874 to employ pulse air jets to clean and dry the electroplated nickel layer.

The Examiner respectfully disagrees.

Appellant states that the electroplated surfaces are sputter cleaned to remove contaminants from it's surface and that an additional step of employing pulse air cleaning in addition to the cleaning methods used in Moysan '874 would require an additional expense.

The Examiner respectfully disagrees.

EP '711 discloses that the use of pulse jets provides both a means for cleaning the surface of an electroplated layer as *well* as reclaim any unused electrolytes on the plated surface so that the unused electrolytes can be recycled for further process application (specific teachings in EP '711 are discussed in items A-I and A-II, incorporated herein).

The cleaning process of Moysan '874 is employed after the plated article has been removed from the electroplating chamber and transferred to a sputtering chamber. The use of the cleaning process in the sputtering chamber is not provided for the added benefit of reclaiming unused electrolyte (as established in EP '711) and further is used

to remove any materials which adhere to the surface of the treated article (such as atmospheric contaminants) from the transfer of the plated surface to the sputtering chamber.

Thus the motivation to further modify Moysan '874 by using the cleaning process of EP '711 is for the purposes of cleaning and drying the electroplated article *and* reclaiming unused electrolyte on the electroplated surface so that the unused electrolyte can be used in additional process steps.

Therefore this argument is not persuasive and the rejection stands.

A-V: Appellant argues that EP '711 does not clean and dry the surface of the object as in Appellant's claimed invention.

The Examiner disagrees.

First, EP '711 clearly states that the process is "for the drying of the objects" (translated page 2, second paragraph) and provides "spot-free dryness" (translated page 5, paragraph beginning "Figure 3 ...").

Appellant argues that EP '711 cites on page 4, fifth paragraph of the translation, that a very thin moisture layer remains on the object that requires further process. Appellant fails to acknowledge that within that same sentence that EP '711 also recites that "a one-time passage of the nozzle device along the objects is generally sufficient to **dry them completely ...**". Thus this argument fails to appreciate the disclosure of EP '711 in its entirety and rather attempts to employ selective disclosures of the EP '711 reference in a failed attempt to successfully argue the prior art rejection of record.

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Therefore this argument is not persuasive and the rejection stands.

A-VI: Appellant argues that the process of subjecting the electroplated surface to pulses of air to dry and clean the electroplated surface, as claimed by Appellant, provides many additional benefits and advantages over the prior art and solves many problems.

Such benefits identified by Appellant are: cleaning the surface to remove water spots or surface defects caused by electroplating.

Appellant compares the instant claimed air drying to prior art drying using nitrogen or hand drying.

The Examiner is not persuaded.

First, EP '711 teaches the same pulse drying process step for an electroplated surface for the same benefits. The arguments or reasoning set forth by Appellant fail to address how the claimed drying process is advantageous over the pulsed air drying process of EP '711. There is no evidence of unexpected results presented by Appellant.

Second, the comparison made in this argument is only to nitrogen drying and hand drying. The argument fails to include the pulsed air teachings of EP '711 in the comparison.

Therefore this argument is not persuasive and the rejection stands.

Issue B: Appellant argues that Moysan '874 does not disclose, suggest or teach that the refractory metal compound layer 24 is deposited by physical vapor deposition as applied to claims 7 and 26.

Appellant argues that Moysan '874 discloses that the refractory metal compound layer is deposited by either vacuum coating or reactive sputter ion plating (column, 5, ll. 5-14 of Moysan '874).

The Examiner disagrees.

The teaching of vacuum coating suggests any vacuum coating which would include physical vapor deposition. One of ordinary skill in the art of vacuum coating would further recognize that sputtering is a specific form of physical vapor deposition. The process of reactive ion sputter deposition (as recited in the paragraph bridging columns 4 and 5) is exemplary of a physical vapor deposition process. Therein material from a target is dislodged from the target, introduced into the chamber and deposited onto the substrate. The act of physically dislodging material from a target to coat a substrate is known as physical vapor deposition.

Thus reactive ion sputtering is held to be a specific embodiment of the more generic process of physical vapor deposition and thus the prior art of Moysan '874 which preferably uses reactive ion sputtering (col. 5, ll. 15-21) is held to explicitly disclose of physical vapor deposition.

Therefore this argument is not persuasive and the rejection stands.

Issue C: Appellant argues that the rejection of claim 65 is improper.

Appellant argues that the pulse drying of EP '711 is emitted for 0.4 seconds and that there is no teaching or suggestion in the prior art to dry the article between 2 and 5 minutes.

The Examiner disagrees.

The prior art apparatus of EP '711 is configured to have air jets wherein a control device 13 can adjust the time which the nozzles are open as well as the frequency for opening the nozzles (paragraph bridging pages 3 and 4 of the translation of EP '711).

One of ordinary skill in the art would have recognized that by optimizing the frequency of opening the nozzles, the time at which the nozzles are open for each pulse and the pressure of compressed air fed to the nozzles, the drying time can be optimized accordingly to a desired drying time period for the electroplated article. Furthermore, EP '711 recognizes the desire for short drying periods (last 4 lines of the abstract).

Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Boesche, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). Furthermore there is no clear teaching by the instant application that such a range is critical.

As of yet, Appellant has failed to provide evidence that the claimed range is critical or that drying in a range from 2-5 minutes provides unexpected results.

The longer the surface is exposed to drying the more thoroughly the surface would be dried.

Therefore one of ordinary skill in the art would have found longer dry times to be obvious since it would have improved the total dryness to the surface of the article.

The argument presented by Appellant in Issue C is insufficient in overcoming the prior art rejection of record. Therefore the rejection stands.

Issue D: Appellant argues that rejection of claim 66 is improper.

Appellant argues that the prior art does not disclose the atomization of water from the surface of the object.

This claim limitation is presented in terms of a function, property or characteristic in relation to the drying process step. The prior art of EP '711 is the same drying apparatus but EP '711 fails to explicitly disclose this function. The prior art apparatus of EP '711 is configured to dry the surface of the electroplated article and reclaim unused electrolyte. While the teachings of EP '711 are silent as to atomization of water droplets on the article surface, the prior art apparatus in combination with the pulse frequency and pressure of compressed air applied through the nozzles (see paragraph bridging pages 3 and 4 of the translation of EP '711) are expected to cause at least a portion of the water or moisture on the article surface to be atomized (see MPEP § 2112).

Appellant has shown no evidence that at least a portion of the prior art water is not atomized. Given that the prior art of EP '711 employs the same process of removing excess liquid from the surface of the plated object, there is a reasonable

expectation that at least a portion of the water present on the surface of the object will be atomized.

While intended use recitations and other types of functional language cannot be entirely disregarded. However, in apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). See also MPEP § 2114.

The manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is

unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted).

“The Patent Office bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature” than when a product is claimed in the conventional fashion. In re Fessmann, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to Appellant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983). Ex parte Gray, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989). See MPEP section 2113.

Issue E: Appellant argues that rejection of claims 1, 2, 4, 5, 7-9, 21-24, 26-36 and 65-67 is improper.

E-I: Appellant argues that EP '711 is non-analogous art to Appellant's invention and to Welty and is not reasonably pertinent to the particular problem that the Appellant has solved.

The Examiner respectfully disagrees.

First with respect to the arguments to non-analogous art:

Welty s drawn to a multilayer deposition process wherein at least one step of the process includes electroplating, for example of electroplating a nickel alloy (as discussed in the rejection above, incorporated herein).

EP '711 is drawn to a process of pulse drying electroplated surfaces (abstract and page 2 of the translation of EP '711, in particular the second paragraph and final paragraph of the translated page).

Thus both a process step of Welty and the process of EP '711 are held to be analogous since they are both drawn to electroplating.

Therefore this argument is not persuasive and the rejection stands.

Second with respect to the arguments that EP '711 is not reasonably pertinent to the particular problem that the Appellant has solved:

Appellant states that EP '711 is directed towards a process for removing liquid from a surface for collection, while Welty and the Appellant's field concern coatings applied on an article. Appellant further states that EP '711 does not provide any suggestion to apply additional layers over the electroplated article.

The Examiner is not persuaded by the reasoning and arguments set forth by Appellant.

First each of EP '711, Welty and the Appellant's are drawn to at least one step which employs an electroplating process. And as set forth above is an establishment of analogous art teachings.

While EP '711 does not teach of the multilayer coating, the Examiner does not apply this prior art reference in such a manner. Rather the rejection is Welty in view of EP '711 wherein Welty employs a multi-step coating process wherein at least one layer

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is an electroplated layer and further wherein additional layers are deposited atop the electroplated layer.

In using an electroplating step, one of ordinary skill in the art would have found it obvious to employ the teachings of EP '711 for the following reasons: process dispels liquid off of the plated surface (abstract), thereby drying the plated object (abstract). The process additionally reclaims any unused liquid from the surface of the object so that the unused liquid can be recycled (abstract). The surface treatment reclaims "electrolyte" (translated page 2 of EP '711, second paragraph, is used in a "general electroplating" process, translated page 2 of EP '711, final paragraph), dries the object "completely" (translated page 4, second to last paragraph) and achieves a "spot-free dryness" of the object (translated page 5, paragraph beginning with "Figure 3 ...").

Appellant's argument is flawed because it fails to appreciate the manner in which the prior art of record is applied to the instant claims and further because it fails to appreciate the full and complete disclosure of the teachings of EP '711 when presenting arguments.

Therefore this argument is not persuasive and the rejection stands.

E-II: Appellant argues that there is no suggestion to modify Welty with EP '711.

The Examiner respectfully disagrees.

As set forth in response A-I above, both the teachings of Welty and EP '711 are held to be analogous art, primarily with respect to the electroplating art.

In addition, a full analysis of the disclosure of EP '711 provides explicit and clear reasons for motivation for using the pulse drying process of EP '711 in an electroplating process. The process dispels liquid off of the plated surface (abstract), thereby drying the plated object (abstract). The process additionally reclaims any unused liquid from the surface of the object so that the unused liquid can be recycled (abstract). The surface treatment reclaims "electrolyte" (translated page 2 of EP '711, second paragraph, is used in a "general electroplating" process, translated page 2 of EP '711, final paragraph), dries the object "completely" (translated page 4, second to last paragraph) and achieves a "spot-free dryness" of the object (translated page 5, paragraph beginning with "Figure 3 ...").

Thus contrary to Appellant's position, there is numerous motivation provided throughout the explicit disclosure of EP '711 for using the pulse drying technique of EP '711 in an electroplating process and one of ordinary skill in the art would have had more than ample motivation to modify the teachings of Welty in light of the teachings of EP '711 for the reasons set forth in the rejection above and restated in the previous paragraph.

Therefore this argument is not persuasive and the rejection stands.

E-III: Appellant argues hindsight reconstruction.

The Examiner respectfully disagrees.

In response to Appellant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that

any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the Appellant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). As set forth in the prior art rejection and again presented in items A-I and A-II above, incorporated herein, the motivation is clearly found in the combined teachings of the prior art of record and thus is not hindsight reconstruction. In this particular case, the knowledge to combine is obvious in view of the prior art of record teachings alone and therefore is not understood how Appellant can argue hindsight reconstruction when such is not the case with the current pending prior art rejections of record.

Therefore this argument is not persuasive and the rejection stands.

E-IV: Appellant argues that there is no suggestion in Welty to employ pulse air jets to clean and dry the electroplated nickel layer.

The Examiner respectfully disagrees.

Appellant states that the electroplated surfaces are sputter cleaned to remove contaminants from it's surface and that an additional step of employing pulse air cleaning in addition to the cleaning methods used in Welty would require an additional expense.

The Examiner respectfully disagrees.

EP '711 discloses that the use of pulse jets provides both a means for cleaning the surface of an electroplated layer *as well as* reclaim any unused electrolytes on the plated surface so that the unused electrolytes can be recycled for further process application (specific teachings in EP '711 are discussed in items E-I and E-II, incorporated herein).

The cleaning process of Welty is employed after the plated article has been removed from the electroplating chamber and transferred to a sputtering chamber. The use of the cleaning process in the sputtering chamber is not provided for the added benefit of reclaiming unused electrolyte (as established in EP '711) and further is used to remove any materials which adhere to the surface of the treated article (such as atmospheric contaminants) from the transfer of the plated surface to the sputtering chamber.

Thus the motivation to further modify Welty by using the cleaning process of EP '711 is for the purposes of cleaning and drying the electroplated article *and* reclaiming unused electrolyte on the electroplated surface so that the unused electrolyte can be used in additional process steps.

Therefore this argument is not persuasive and the rejection stands.

E-V: Appellant argues that EP '711 does not clean and dry the surface of the object as in Appellant's claimed invention.

The Examiner disagrees.

First, EP '711 clearly states that the process is "for the drying of the objects" (translated page 2, second paragraph) and provides "spot-free dryness" (translated page 5, paragraph beginning "Figure 3 ...").

Appellant argues that EP '711 cites on page 4, fifth paragraph of the translation, that a very thin moisture layer remains on the object that requires further process. Appellant fails to acknowledge that within that same sentence that EP '711 also recites that "a one-time passage of the nozzle device along the objects is generally sufficient to **dry them completely** ...". Thus this argument fails to appreciate the disclosure of EP '711 in its entirety and rather attempts to employ selective disclosures of the EP '711 reference in a failed attempt to successfully argue the prior art rejection of record.

Therefore this argument is not persuasive and the rejection stands.

E-VI: Appellant argues that the process of subjecting the electroplated surface to pulses of air to dry and clean the electroplated surface, as claimed by Appellant, provides many additional benefits and advantages over the prior art and solves many problems.

Such benefits identified by Appellant are: cleaning the surface to remove water spots or surface defects caused by electroplating.

Appellant compares the instant claimed air drying to prior art drying using nitrogen or hand drying.

The Examiner is not persuaded.

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First, EP '711 teaches the same pulse drying process step for an electroplated surface for the same benefits. The arguments or reasoning set forth by Appellant fail to address how the claimed drying process is advantageous over the pulsed air drying process of EP '711. There is no evidence of unexpected results presented by Appellant.

Second, the comparison made in this argument is only to nitrogen drying and hand drying. The argument fails to include the pulsed air teachings of EP '711 in the comparison.

Therefore this argument is not persuasive and the rejection stands.

Issue F: Appellant argues that the rejection of claim 65 is improper.

Appellant argues that the pulse drying of EP '711 is emitted for 0.4 seconds and that there is no teaching or suggestion in the prior art to dry the article between 2 and 5 minutes.

The Examiner disagrees.

The prior art apparatus of EP '711 is configured to have air jets wherein a control device 13 can adjust the time which the nozzles are open as well as the frequency for opening the nozzles (paragraph bridging pages 3 and 4 of the translation of EP '711).

One of ordinary skill in the art would have recognized that by optimizing the frequency of opening the nozzles, the time at which the nozzles are open for each pulse and the pressure of compressed air fed to the nozzles, the drying time can be optimized

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accordingly to a desired drying time period for the electroplated article. Furthermore, EP '711 recognizes the desire for short drying periods (last 4 lines of the abstract).

Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Boesche, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). Furthermore there is no clear teaching by the instant application that such a range is critical.

As of yet, Appellant has failed to provide evidence that the claimed range is critical or that drying in a range from 2-5 minutes provides unexpected results.

The longer the surface is exposed to drying the more thoroughly the surface would be dried.

Therefore one of ordinary skill in the art would have found longer dry times to be obvious since it would have improved the total dryness to the surface of the article.

The argument presented by Appellant in Issue F is insufficient in overcoming the prior art rejection of record. Therefore the rejection stands.

Issue G: Appellant argues that rejection of claim 66 is improper.

Appellant argues that the prior art does not disclose the atomization of water from the surface of the object.

This claim limitation is presented in terms of a function, property or characteristic in relation to the drying process step. The prior art of EP '711 is the same drying apparatus but EP '711 fails to explicitly disclose this function. The prior art apparatus of EP '711 is configured to dry the surface of the electroplated article and reclaim unused electrolyte. While the teachings of EP '711 are silent as to atomization of water droplets on the article surface, the prior art apparatus in combination with the pulse frequency and pressure of compressed air applied through the nozzles (see paragraph bridging pages 3 and 4 of the translation of EP '711) are expected to cause at least a portion of the water or moisture on the article surface to be atomized (see MPEP § 2112).

Appellant has shown no evidence that at least a portion of the prior art water is not atomized. Given that the prior art of EP '711 employs the same process of removing excess liquid from the surface of the plated object, there is a reasonable expectation that at least a portion of the water present on the surface of the object will be atomized.

While intended use recitations and other types of functional language cannot be entirely disregarded. However, in apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

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Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). See also MPEP § 2114.

The manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

“[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted).

“The Patent Office bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature” than when a product is claimed in the conventional fashion. In re Fessmann, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to Appellant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292

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(Fed. Cir. 1983). Ex parte Gray, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989). See MPEP section 2113.

The argument presented by Appellant in Issue G is insufficient in overcoming the prior art rejection of record. Therefore the rejection stands.

Issue H: Appellant argues that the rejection of claims 10-20 is improper.

Appellant's arguments therein are not particularly clear.

The onset of Appellant's arguments are drawn to claim 66. Note that claim 66 is not within the rejected claims 10-20 in Issue H.

In response to Appellant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Pudem teaches of metal finishing processes wherein a first copper plating step is performed and thereafter, to form a brass finish, nickel and then chrome are plated (col. 10, lines 1-19). **The advantages of a first copper plating is that it provides a uniform surface upon which additional layers can be plated (col. 2, ll. 1-5).** Thus in depositing a brass finish, Pudem first teaches depositing copper (to provide a uniform surface upon which additional layers can be plated) and thereafter forming a nickel layer and chrome layer sequentially.

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The motivation for using copper is to provide a uniform surface upon which additional layers are plated. The motivation for further depositing nickel and chrome is to impart a brass finish to the substrate.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Welty by plating the multilayer structure first with a copper plating layer as suggested in the teachings of Pudem since copper plating provides an adherent coating surface on a substrate to enhance the adherence of subsequently plated materials with the substrate. The combined structure would have improved the decorative and protective characteristics of the article of Welty.

Appellant's arguments fail to provide clear and convincing evidence as to why one of ordinary skill in the art would not have been motivated to modify the teachings of Welty by using the teachings of Pudem as set forth in the outstanding rejection of record.

In fact the teachings of Pudem suggest providing a copper layer *between a nickel layer and chrome layer* for the purposes of providing a uniform surface upon which the chrome layer and additional layers can be deposited and to further impart a particular brass color to the substrate.

The argument presented by Appellant in Issue H is insufficient in overcoming the prior art rejection of record. Therefore the rejection stands.

For the above reasons, it is believed that the rejections should be sustained.

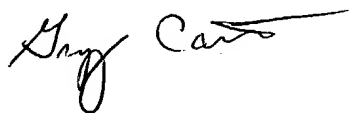
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Respectfully submitted,

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